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Role of Coastal Bend Organizational Stakeholders in Regional Recovery and Resilience Efforts

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PROJECT OVERVIEW AND DESIGN

Severe storms such as Hurricane Harvey that battered the Texas Gulf Coast in August 2017 not only stretch resources related to short-term rescue, safety and health, but also generate extensive discussion and planning to manage the long-term recovery as well as to improve the resilience of Texas Coastal communities. Any future planning, policies, and resource allocation strategies will reflect key local and state stakeholders' views regarding risk, cost, capacity, and policy options (see, for example, Alexander, 2000; Adger et al. 2005; Comfort, Boin and Demchak, 2010; Portney, 2015; and Wenger, 2017). The project team designed and deployed a targeted in-depth survey of key stakeholders in the Texas Coastal Bend Region to identify their views on problem sources, risk perceptions, planning goals, policy evaluations, resource allocations, and patterns of interaction across groups related to recent environmental stressors like Harvey. The findings from this survey are reported below.

Survey of Stakeholder Organizations

The team sought to identify the universe of relevant organizations working on issues of recovery and resilience in this Coastal Bend Region of Texas. Organizations appropriate for this study include local, regional, state and national governmental units, university extension personnel, and more locally centered business and industry, healthcare providers, advocacy groups, and nonprofit organizations within Aransas, Bee, Brooks, Duval, Jim Wells, Kenedy, Kleberg, Live Oak, Nueces, Refugio, and San Patricio. Each of these stakeholder groups plays an important role in creating support for policies and actions that can strengthen community resilience.

Stakeholder organizations within each of the groups listed below were identified through several approaches. First, the Texas OneGulf project team and personnel from Texas Sea Grant Extension shared contact information for relevant organizations and distributed a recruitment flyer through their outreach channels. Second, the research team used various online resources to identify relevant organizations and collect contact information for the appropriate individuals.

The g*overnment stakeholder* group includes individuals working in federal, state, regional, county, city, and town governments as well as individuals working in independent school districts, colleges, and universities. This category also includes transit-related authorities, such as the publicly owned regional transit authorities, airports, and seaports; resource-related authorities, such as river authorities, water districts, and soil and water conservation districts; and social service related authorities such as housing authorities. Specific organizations were included in this group based upon a mixture of three factors: available contact information, location within or knowledge of the Coastal Bend Region, and knowledge of Hurricane Harvey operations.

The b*usiness and business advocacy stakeholder* group comprises individuals from local businesses in the Coastal Bend, the chambers of commerce staff within the area, and statewide or regional business advocacy groups. Specific local businesses and chambers of commerce were included based on available contact information and location within the Coastal Bend Region. Specific advocacy organizations were included based on regional location and their representation of local industries important to resilience efforts.

The e*nvironment and environmental advocacy stakeholder* group consists of individuals from environmental groups participating in conservation, sustainability, or resilience efforts and those advocating for an environment-related cause. They include nature conservancies, environmental foundations, environmental partnerships, environmental trusts, environmental associations, nonprofits working towards sustainability, and nonprofits working towards environmental justice. Specific local environmental organizations were included based on available contact information and location within the Coastal Bend Region. Advocacy groups were included based on regional location and their representation of subjects related to resiliency.

The s*ervice nonprofit stakeholder* group includes individuals from organizations that either support vulnerable populations or provide public assistance during disaster response. These organizations advocate for vulnerable populations or provide direct support to low-income populations, such as shelters, food banks, charities, and emergency aid. Specific service nonprofit stakeholders were included based on available contact information and location within the Coastal Bend Region.

The *healthcare stakeholder* group comprises individuals from hospitals, medical centers, mental health clinics, community health centers, assisted living facilities, nursing homes, and regional medical groups. Specific organizations were included based upon a mixture of available contact information and of location within or knowledge of the Coastal Bend Region.

The Stakeholder Survey was conducted by the Public Policy Research Institute (PPRI) at Texas A&M University from January 21 to March 10, 2020. PPRI conducted the survey online using Qualtrics, a state-of-the-art survey research platform that tracks data collection and provides real-time updates regarding survey completes. Starting on January 21st, a total of 1,751 potential participants with unique emails were sent a recruitment email customized to their organization type via Qualtrics. Of these emails, 13 failed and 150 bounced back, indicating bad addresses. For these bad email addresses, PPRI looked online for alternative contact information and emailed and calling those organizations for a contact when one was not found online. This was done to provide every opportunity for organizations to respond to the survey. For the remaining initial emails, up to three reminder emails were sent via Qualtrics for individuals who had not yet started or finished the survey. The reminder emails were sent at different times of the day and generally sent 3 or 4 days apart.

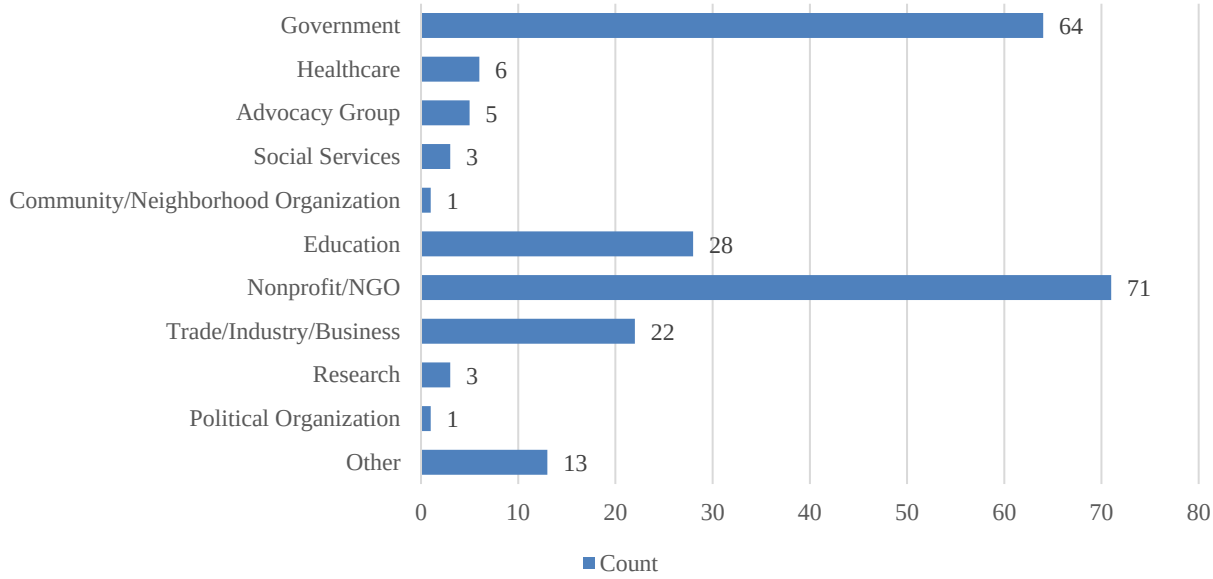
PPRI attempted to reach all non-responsive individuals via telephone calls starting on February 12th and ending on March 3rd. Non-respondents included bounced and failed emails as well as those who did not click on the survey after the 3 reminder emails were sent. A total of 460 potential participants were reached by these calls. During these calls, PPRI shared the importance of the survey, confirmed email addresses, offered to resend the survey, and suggested that the respondent check any spam filter. The callers also asked the respondent to recommend additional potential respondents in their field. If the respondent stated that a different individual would be a more relevant survey contact at their organization, the new potential participant's contact name, email, and phone number was requested by the caller. The 249 new potential participants discovered during these phone calls were sent an email invitation via Qualtrics. Of these emails, three failed and 15 bounced back. Non-respondents received up to three reminder emails as needed.

To encourage submission of completed surveys, all participants who had partially completed the survey were sent two additional emails to remind them to complete the questionnaire. As an additional method of increasing participation and avoiding spam filters, PPRI sent emails outside of the Qualtrics platform. For this approach, potential participants were sent a personal link to the survey, generated by Qualtrics, through a third party mail system. This process was used to try to circumvent spam filters while still tracking survey completions through Qualtrics. The Qualtrics emails that went unanswered were delivered online using Maestro on March 4th with no major difference in completions, clicks, or bounces compared to Qualtrics. Some of the new contact emails obtained from telephone calls were also released in Lime Survey and Outlook. Again, compared to Qualtrics, there were no major differences in completions, clicks, or bounced emails. Of the new emails sent with personal survey links through these third party mail systems, 56 bounced in these third party mail systems and 15 bounced and 3 failed in Qualtrics.

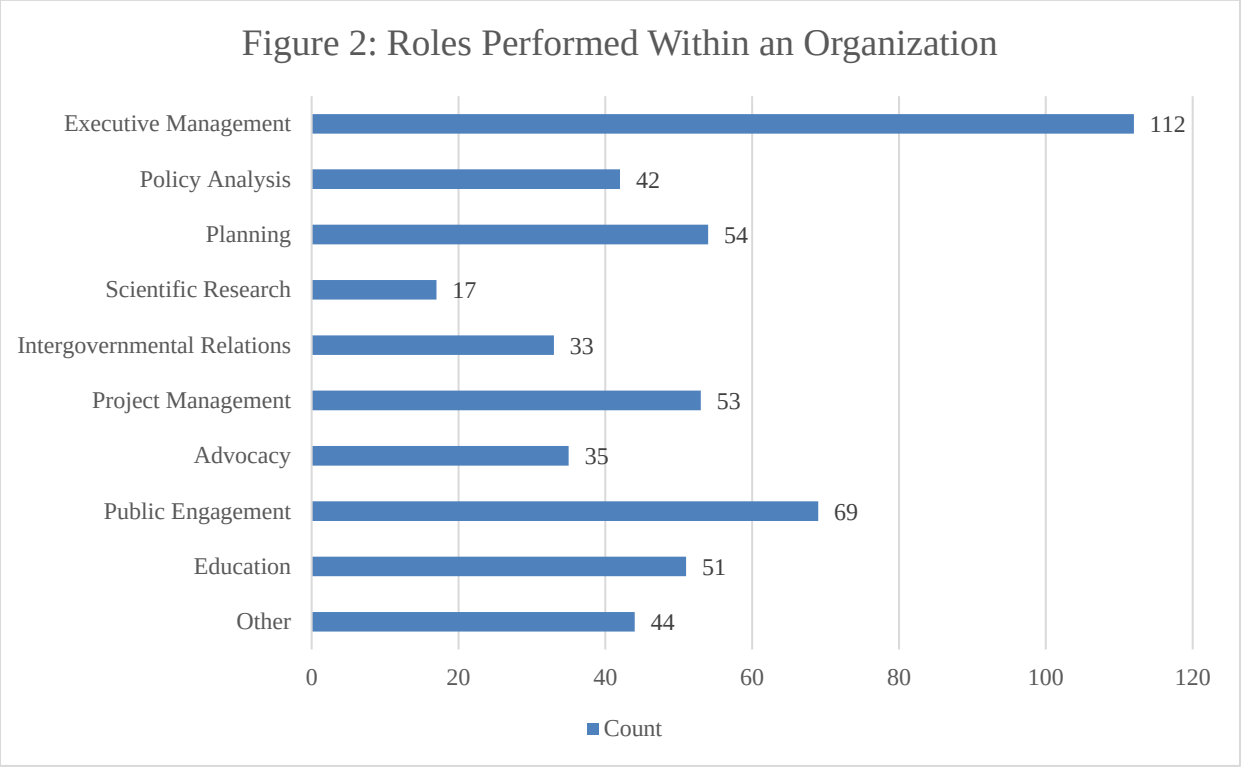
A combined total of 2,000 potential participants were sent recruitment emails about the survey (1,751 initial unique emails plus 249 additional unique emails). When the survey closed on March 10th, 448 of those who had received an invitation to the survey had opened the survey link. Participants who did not complete any portion of the survey or click through the entire study were removed from the final survey data set, as were participants who did not complete a majority of the survey information. Participants who did not provide organizational information were also not retained in the survey data set. This left 217 participants included in the final survey data set. The completion rate was 10.85% with a median completion time of 15.1 minutes time.

Participants in this study worked for a variety of organizations (Figure 1). The majority of participants worked for nonprofits/non-governmental organizations (32.7 percent) and government organizations (29.5 percent). On average, participants had been with their current organization for 9.8 years (*SD* = 8.68).

Figure 1: Number of Participants by Organization Type



Respondents also held various, and often multiple, roles within their organization (see Figure 2). By far the most common role performed was that of executive management. However, many respondents also worked in public engagement, planning, project management, and education.

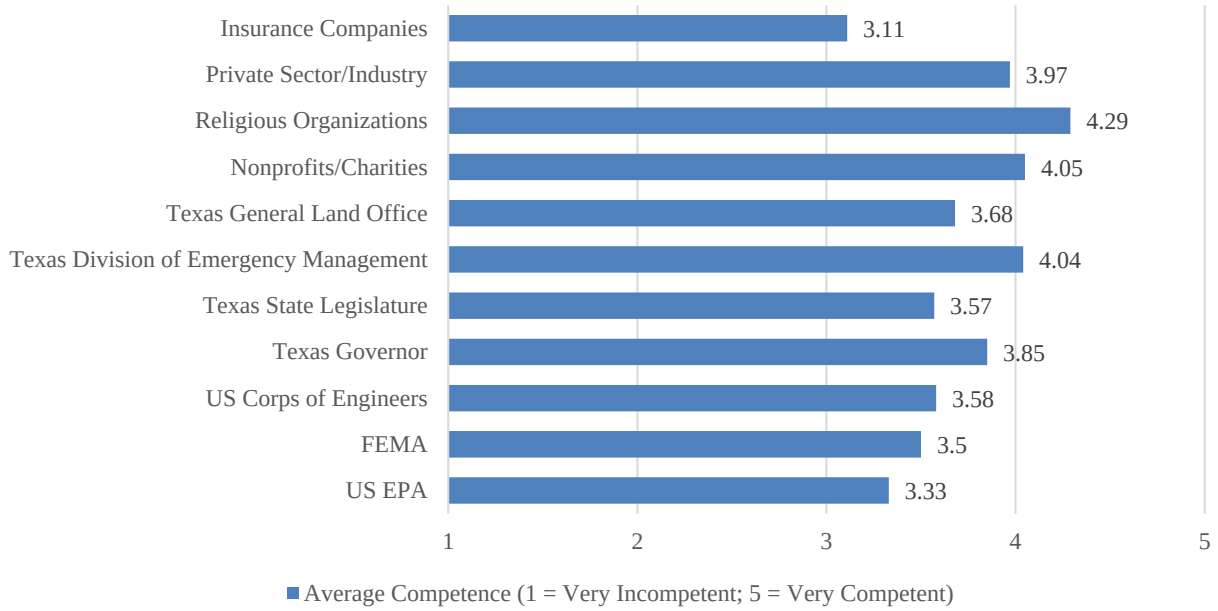


Perceived Unit Competence

Stakeholder respondents were asked to indicate how competent or incompetent they found the various organizational entities that were working to provide help for their communities when faced with natural disasters like Harvey. The full list of responses and the scale used are included in Figure 3. We summarize here the major stakeholder observations.

Overall, participants indicated that most organizations fell somewhere in the range of *Neutral* to *Competent.* Participants indicated that they found community religious organizations (such as churches, mosques, or synagogues), nonprofits, and the Texas Division of Emergency Management to be the most competent at helping their communities recover from natural disasters, with average ratings falling between *Competent* and *Very Competent*. Other state agencies such as the Governor's Office, the Texas General Land Office and the Texas Legislature also received relatively good ratings. The U.S. Corps of Engineers, FEMA and U.S. EPA also received generally good marks, if slightly lower than state offices. Participants rated insurance companies lowest, but still as at least *Neutral* at helping local communities recover. No group received an overall negative rating.

Figure 3: Perceived Competence of Entities at Helping Local Communities Recover from Natural Disaster



Impact of Hurricane Harvey on Flooding, Damage, and Recovery

Participants were asked to examine a list of potential causes of flooding and to list how much impact they believe each cause had on the amount of flooding that occurred in the Coastal Bend area as a result of Hurricane Harvey. Of the potential causes of flooding listed, over 65 percent of participants believed that inadequate drainage of flood prone areas had a *Strong* or *Very Strong* impact, nearly 60 percent believed that building in areas prone to flooding had a *Strong* or *Very Strong* impact, and almost 51 percent believed that degraded natural flood control areas (e.g., wetlands, coastal barrier islands, sand dunes) had a *Strong* or *Very Strong* impact on flooding in the Coastal Bend area. A substantial number of respondents also believed that inadequate flood protection infrastructure had a *Strong* or *Very Strong* impact on Harvey flooding. See Table 1 below for the full list of potential causes and respondents' ratings of their impacts.

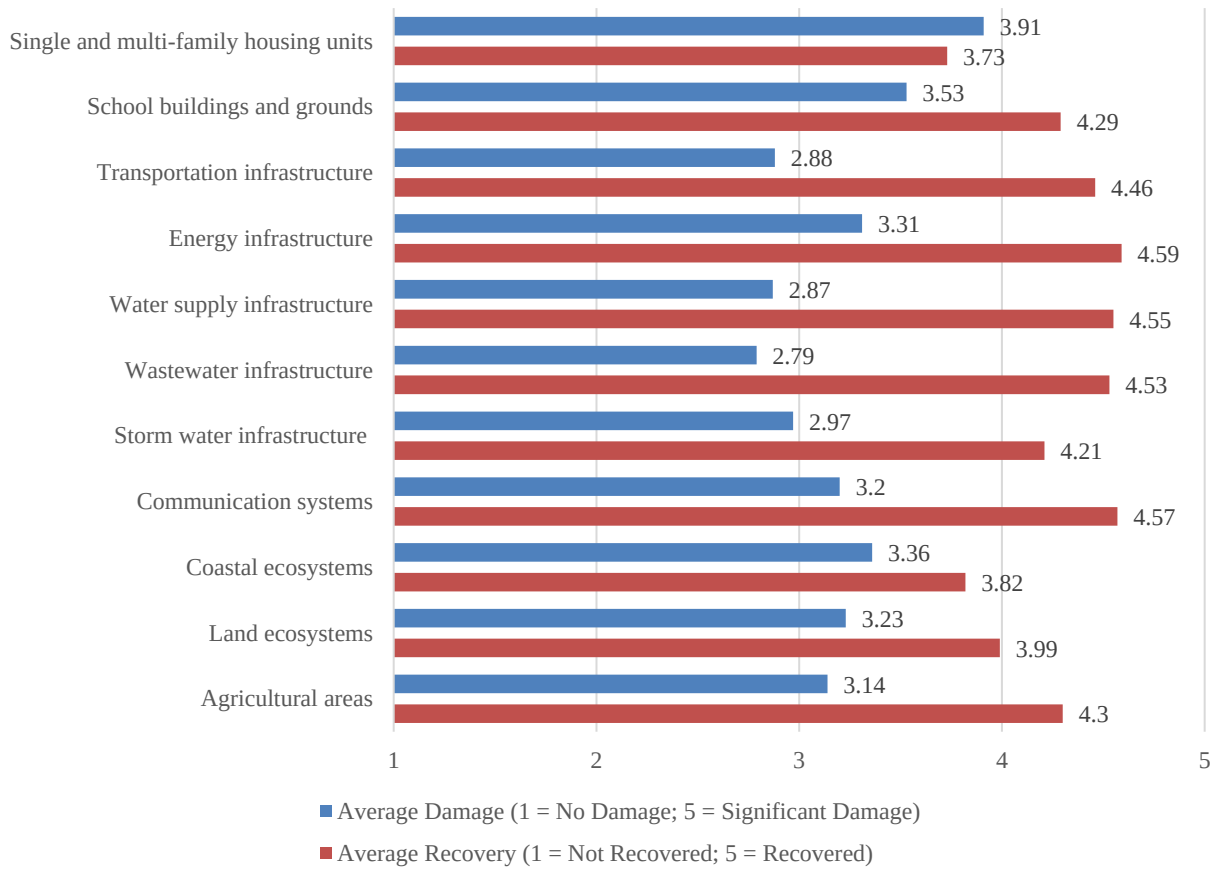
Table 1
Impact of Various Causes of Flooding in the Coastal Bend Area due to Hurricane Harvey

Potential Causes of Flooding from Hurricane Harvey	No Impact	Weak Impact	Somewhat Strong Impact	Strong Impact	Very Strong Impact	Not Sure
	(Percentage)					
Building in areas prone to flooding	3.24	11.57	17.13	24.54	35.19	8.33
Degraded natural flood protection areas such as wetlands, open space, coastal barrier islands, and sand dunes	4.61	15.67	15.21	24.42	26.27	13.82
Inadequate drainage of flood prone areas	3.24	7.87	13.89	35.65	30.09	9.26
Development that covers too much land in nonabsorbent materials such as concrete and asphalt	4.17	22.69	12.50	19.44	25.46	15.74
Inadequate flood protection infrastructures such as dams, levees, storm water systems, retention ponds, and sea walls	5.56	24.07	18.52	21.30	18.06	12.50
Ineffective intergovernmental flood planning and cooperation	4.63	22.22	17.59	19.44	19.91	16.20
Funding shortage to build appropriate flood protection infrastructures	3.24	15.74	17.59	20.83	25.46	17.13
Local hazard mitigation plan does not require implementation of the actions it identifies as ways to improve flood protections.	4.65	16.74	19.53	13.02	14.88	31.16

Impact in the Coastal Bend Community

To assess both perceived damage and subsequent recovery, participants were asked two questions: 1) "How much damage did Hurricane Harvey cause to the following buildings, infrastructure, and resources in your community?" and 2) "How much have the following buildings, infrastructure, and resources in your community recovered since Hurricane Harvey?" Participants rated damage on a 1 to 5 scale, ranging from *No Damage* to *Significant Damage*. Likewise, participants rated recovery on a 1 to 5 scale, ranging from *Not Recovered* to *Recovered*. Responses are reported in Figure 4 below.

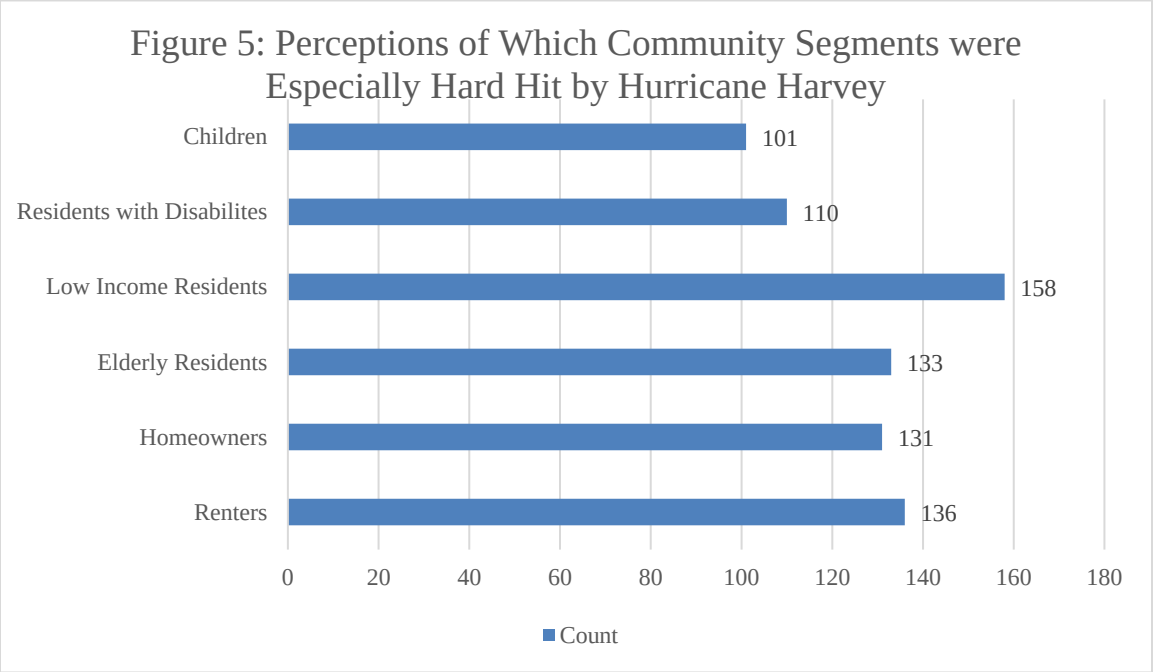
Figure 4: Average Percieved Damage to and Recovery of Key Buildings, Infrastructure, and Resources



As shown in Figure 4, participants indicated that single and multi-family housing units sustained the most damage out of all of the listed buildings, infrastructure, and resources, and were considered to be the least recovered. Energy infrastructure, while identified has having incurred between some damage to a lot of damage, was considered to have recovered the most, followed closely by communication systems, water supply infrastructure, and wastewater infrastructure.

Participants were also asked to indicate which, if any, segments of their communities were especially hard hit by Hurricane Harvey. Of the community segments listed in Figure 5, 158 participants indicated that low-income residents in their community were especially hard hit. About the same number of participants

indicated renters (136), the elderly (133), and homeowners (131) were especially hard hit. Children were selected by the least number of participants (101).



Market Sector Recovery

In addition to other areas of recovery, participants were asked about their perceptions of the recovery of various market sectors in their communities. Overall, participants believed that the large-scale commercial enterprise sector was the most recovered. Almost 69 percent of respondents indicated that they found that sector to be *Mostly Recovered* or *Recovered*. There was less certainty about small businesses and the rental housing market. While 44.1 percent of respondents believed that small businesses were *Mostly Recovered* or *Recovered*, another 27.7 percent indicated that the small business sector was only *Somewhat Recovered*. Similarly, 44 percent believed that the rental housing market *Mostly Recovered* or *Recovered*, while 21.8 percent indicated that it was *Somewhat Recovered*, and 14.6 percent believed it was *Not Recovered* or only *A Little Recovered*. Table 1 lists the full set of responses and the scale.

Table 2

Perceptions of Market Sector Recovery after Hurricane Harvey

Market Sectors	Not Recovered	A Little Recovered	Somewhat Recovered	Mostly Recovered	Recovered	Not Sure
			(Percentage)			
Rental housing market	4.15	10.36	21.76	22.80	21.24	19.69
Real estate market	2.58	3.61	15.98	29.90	27.84	20.10
Recreational fishing	0.54	3.23	10.22	26.88	33.87	25.27
Tourism (other than fishing)	0.53	3.74	20.32	29.41	25.13	20.86

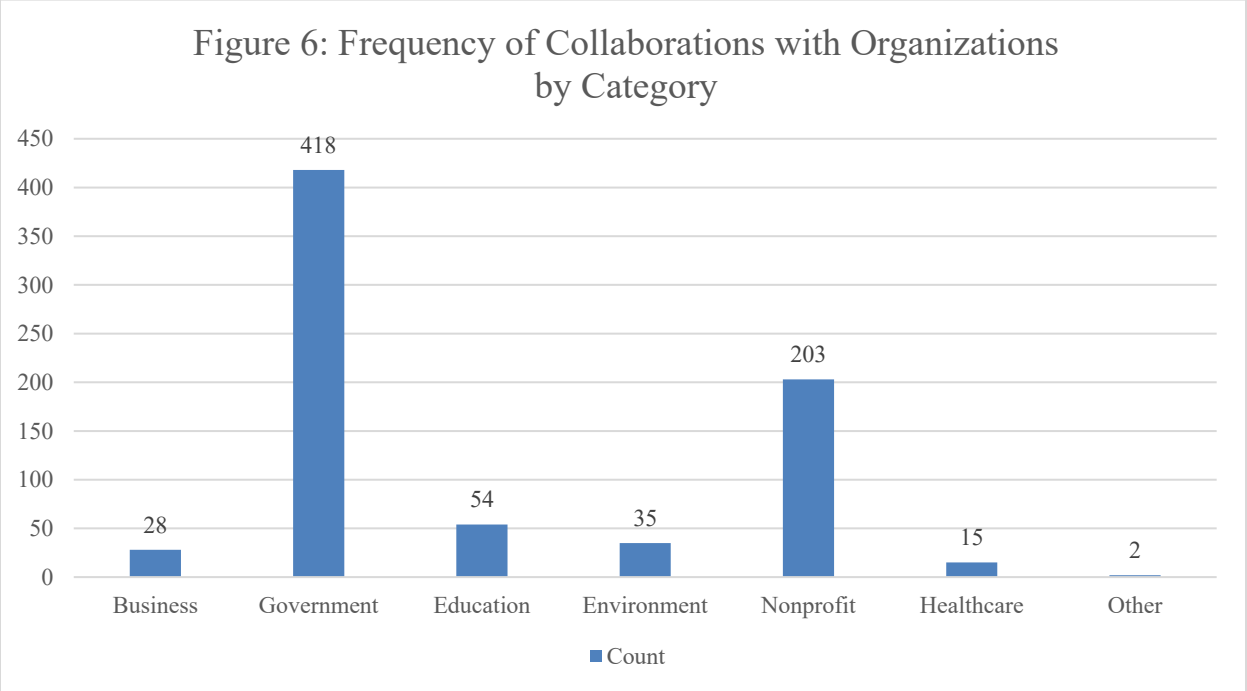
Small businesses	2.05	8.21	27.69	26.67	17.44	17.95
Large-scale commercial enterprises	0.00	1.57	8.38	28.80	39.27	21.99
Healthcare services	7.49	5.88	8.02	14.44	42.25	21.93
Job market	2.08	6.25	17.19	17.19	36.98	20.31

Organizational Collaboration and Activities

Next, organizational representatives were asked to list organizations with whom they have collaborated on recovery and resilience issues since Hurricane Harvey. Along with the name of the organizations with whom they have collaborated, participants were asked to identify the frequency of the collaboration (either weekly, monthly or annually) as well as the importance of the collaboration for improving resiliency.

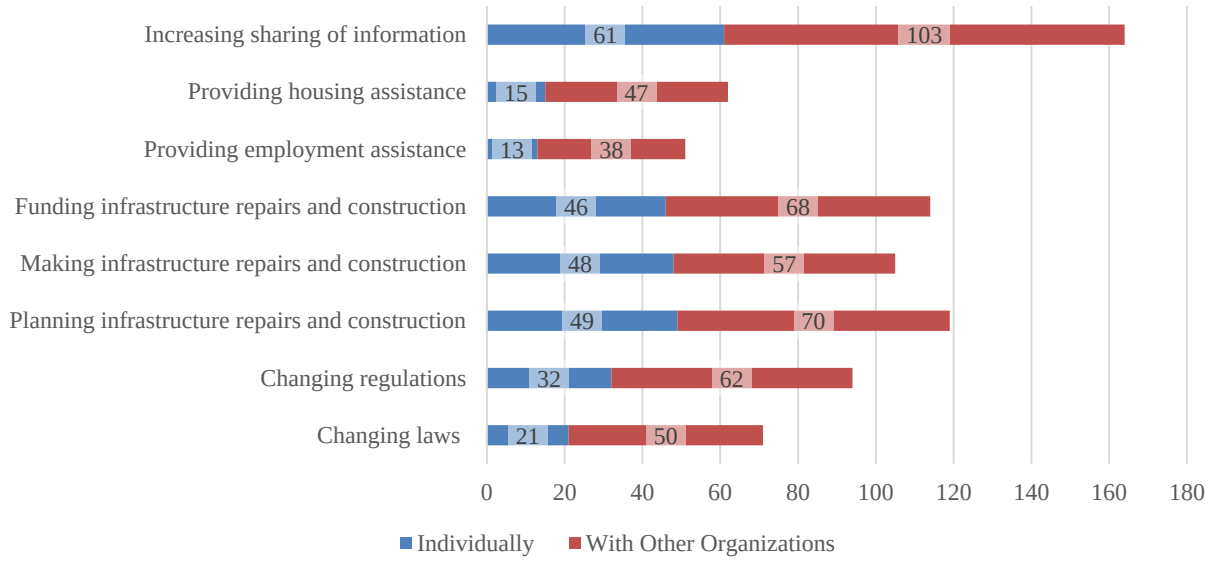
Participants identified approximately 362 organizations with whom they have collaborated since Hurricane Harvey. The top five most collaborated with organizations are FEMA (52 collaborations), the Texas General Land Office (39 collaborations), various county governments (17 collaborations), Red Cross (14 collaborations), and the Texas Division of Emergency Management (14 collaborations).

These organizations were coded into seven categories: Business, Government, Education, Environmental, Nonprofit, Healthcare, and Other. The frequency of these collaborations is depicted in Figure 6. By far, organizations collaborate most often with government organizations. These include local, state, and federal government entities. The second most collaborated with groups include nonprofit organizations. These entities include national groups like the American Red Cross as well as several nonprofit organizations local to both Texas and the Coastal Bend Region.



In terms of recovery and resiliency activities, organizational representatives were asked to indicate whether or not they had engaged in specific activities, either individually or with other organizations. The most engaged-in activity was increasing the sharing of information. For this activity, 61 organizations worked to increase information sharing individually, while 103 organizations worked on this task with other organizations. Infrastructure repair and construction-related activities were also popular, and included the funding, planning, and making of infrastructure repairs and construction. See Figure 7, below, for additional detail.

Figure 7: Number of Groups Performing Specific Hurricane Recovery and Resilience Activities



Support for Policy Actions

Respondents were asked to indicate how much they oppose or support the following policy actions meant to improve recovery and resiliency to hurricanes and strong storms in the Coastal Bend area. Support was rated on a 1 to 5 scale, where 1 indicated that the participant *Strongly Opposed* the policy action and 5 indicated that they *Strongly Supported* the action. The top three most supported actions were safeguarding natural flood protection areas, strengthening infrastructure design standards, and strengthening building design standards (see Figure 8). Other supported policy actions clustered around limiting rebuilding and development in flood prone areas. The least supported policy action was charging impact fees for development in flood prone areas. In fact, there was a significant difference in support by race, such that racial minority participants were less likely than white participants to support charging impact fees.

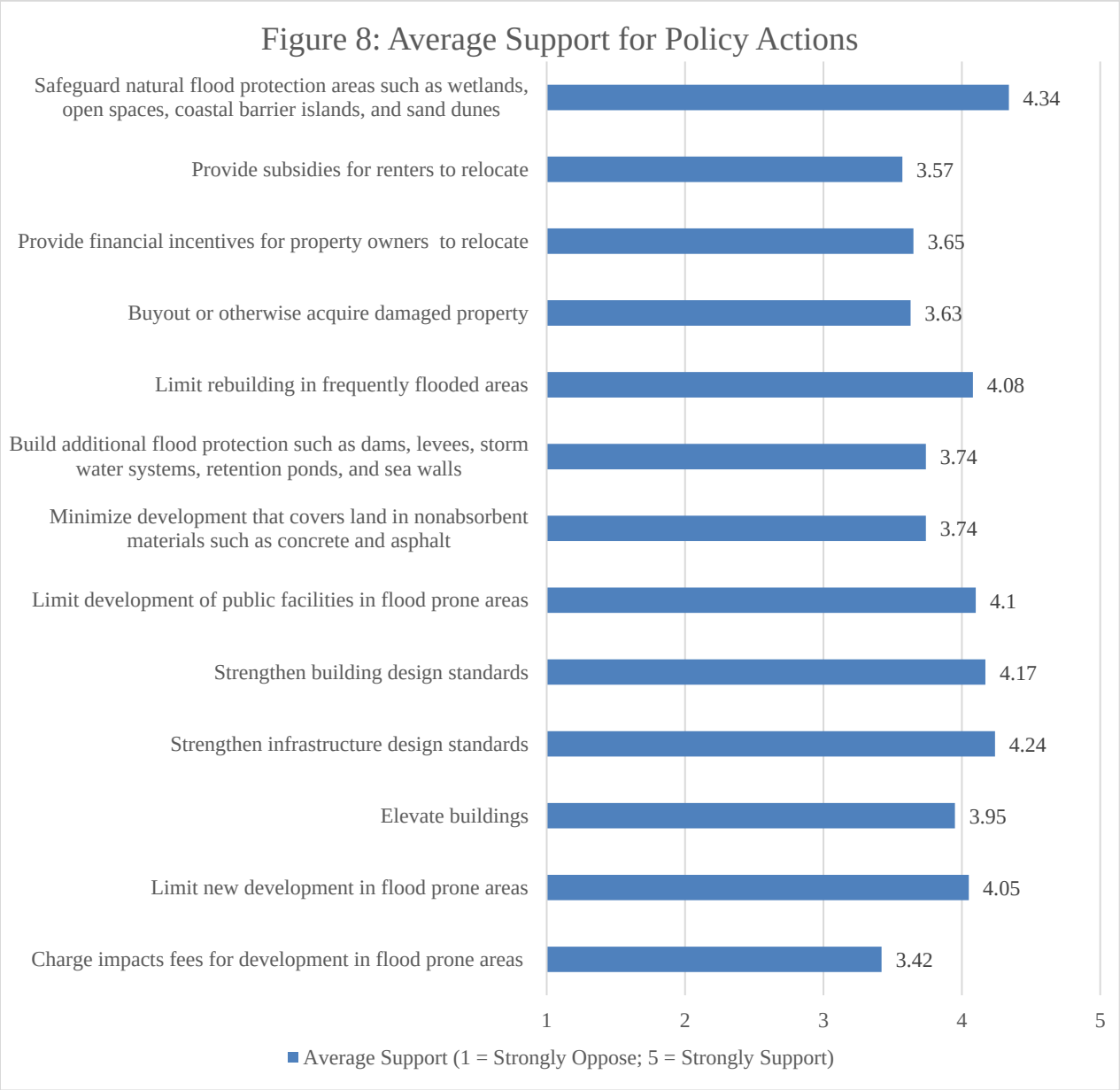


Figure 8: Average Support for Policy Actions
Safeguard natural flood protection areas such as wetlands, open spaces, coastal barrier islands, and sand dunes
4.34
Provide subsidies for renters to relocate
3.57
Provide financial incentives for property owners to relocate
3.65
Buyout or otherwise acquire damaged property
3.63
Limit rebuilding in frequently flooded areas
4.08
Build additional flood protection such as dams, levees, storm water systems, retention ponds, and sea walls
3.74
Minimize development that covers land in nonabsorbent materials such as concrete and asphalt
3.74
Limit development of public facilities in flood prone areas
4.1
Strengthen building design standards
4.17
Strengthen infrastructure design standards
4.24
Elevate buildings
3.95
Limit new development in flood prone areas
4.05
Charge impacts fees for development in flood prone areas
3.42
1
2
3
4
5
Average Support (1 = Strongly Oppose; 5 = Strongly Support)

Finally, participants were asked to assess how ineffective or effective they believe certain government actions would be for improving community resilience. As Table 3 indicates, over two-thirds of all participants indicated that all policies listed would be either *Effective* or *Very Effective* government actions. Specifically, over 85 percent of participants indicated a belief that forming partnership agreements for recovery work would be an effective government action, and over 84 percent believed that prioritizing functions most critical to recovery would an effective government action.

Table 3
Perceived Efficacy of Government Actions on Improving Community Resilience

Government Actions	Very Ineffective	Ineffective	Neutral	Effective	Very Effective	Not Sure
			(Percentage)			
Establish coordination agreements between municipalities to provide mutual aid	0.49	3.45	9.85	48.28	25.12	12.81
Establish coordination agreements for using municipal and state resources	0.49	1.48	9.85	49.26	29.56	9.36
Prioritize functions most critical to recovery	0.49	0.49	7.39	42.86	41.38	7.39
Form partnership agreements for recovery work such as debris removal and road repairs	0.00	0.99	5.91	45.32	39.90	7.88
Streamline application processes for social services and disaster programs	0.99	1.97	7.39	31.53	48.28	9.85
Create a regional task force to prioritize and oversee the recovery process	0.99	5.42	14.29	33.99	33.99	11.33
Identify regulatory waivers needed during a disaster	0.99	3.96	14.85	29.70	36.63	13.86

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